Determining the Cost/Benefit of Learning Objects
Vicki S. Freeman, Ph.D., Jean Brickell, Ed.D., University of Texas Medical Branch at Galveston

Abstract
The fundamental idea behind learning objects (LOs) is the creation of instructional components that can be delivered over the Internet, accessed by a number of individuals simultaneously with minimal effort, and reused numerous times in different learning contexts. The power of this approach is that it will reduce the amount of time faculty members spend in developing instructional materials for their courses and be an efficient method of distributing content. However, this vision that these objects will be used by faculty to create individualized lessons, thereby increasing their productivity, has not been tested. This poster will show learning object examples, the cost and usage data being collected on each object, and how this data is then used in a cost analysis of each LO to determine cost efficiency.

Levels of Learning Objects
Learning objects are grouped into three categories based on their granularity.
1. images, illustrations
2. video, non-interactive animation
3. interactive animation & activities

Progress in LO Development
LOs developed as of Dec. 2006:
• Level 1 = 378
• Level 2 = 117
• Level 3 = 73
• "Public status" = 340

Examples of Electrophoresis
Database
A screen for each LO provides data about the LO and a data entry point. The development and production teams enter their time and activities into the relational database for each LO.

Evaluation
Items that are being evaluated relate to the LOs, usage of LOs, dissemination of LOs, and sustainability of the repository.

Reports
The reports are generated to summarize the data that has been entered and to calculate the cost of the effort. Examples of these reports are as follows:

Effort Expended for Specific Learning Object

Learning Object Properties Detail
Learning Object Properties [ Edit ]
LO ID: 309
Name: CH2030404.sdf
Subject: Chemistry
Format: Flash
Author: Smith, Toby
Version: 1

Cost/Time:
• Estimated Cost of Effort: $ 90.14
• Total Effort Expended: 225 minutes (3.75 hours)

Evaluations:
• 7 [ View ]

Summary of Evaluation Data Collected from Users
If you do you have any information on gains in student learning or performance (edit that you can attribute to their exposure to this Learning Object (check all that apply)? (n = 214)

<table>
<thead>
<tr>
<th># Responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>39%</td>
</tr>
<tr>
<td>211</td>
<td>39%</td>
</tr>
<tr>
<td>212</td>
<td>39%</td>
</tr>
</tbody>
</table>

Evaluation – Comments

User Data

Conclusion
The tracking system for the Learning Objects (LOs) Project collects data on numerous components including:
• General Qualities, Time Saving Qualities, and perceived Gains in Student Learning. Early outcomes of tracking system indicate that:
• The individuals who access the LO websites were primarily CLS and CLT faculty members, but about 10% were students of these programs.
• Of the 214 respondents, 97% reported that they would use the LOs again and planned to use other LOs.
• 43% reported that the LOs helped students understand the content better.
• The amount of time saved through using LOs averaged one hour per user.
• 39 users reported that their students' content comprehension improved because of the LOs they used.